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Impact of Factors Affecting the Decision to Hold Cash of Enterprises Listed on Vietnam Stock Market

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ABSTRACT

Research on the impact of factors affecting the cash holding decisions of listed companies on the Vietnamese stock market. The group recommends a number of solutions and policies to minimize risks, costs and optimize cash holdings of businesses in Vietnam. Accordingly, the author presents a quantitative research model and hypotheses about the influence of factors on businesses' cash holding decisions. Propose recommendations, solutions, and policies that contribute to improving the effectiveness of cash holding decisions at listed enterprises in Vietnam.

To achieve the goals mentioned above, the research focuses on answering the main research questions, including:

Research question 1: What factors influence the decision to hold cash of Vietnamese businesses in general and of businesses in each industry in Vietnam in particular, and how? Research question 2: What is the difference in businesses' cash holding decisions before and after the Covid 19 pandemic in Vietnam? Research question 3: How do businesses in Vietnam optimize the use of cash, while ensuring that their production and business activities are carried out effectively?

Keywords: Liquidity, cash, listed companies

1. Introduction

Cash retention policy is one of the important financial management strategies that businesses in Europe have applied to overcome the crisis caused by the Covid 19 pandemic. When the pandemic broke out, businesses faced many adverse economic events, such as reduced sales, increased costs and loss of new business opportunities. To cope with this situation, many businesses in Europe have decided to suspend large investment activities and instead focus on hoarding the highest source of liquidity - cash.

Report on the impact of the Covid epidemic on the operations of Vietnamese businesses, conducted by the World Bank (WB) in collaboration with the Vietnam Chamber of Commerce and Industry (VCCI), points out that the Covid pandemic 19 is a factor that has had a serious impact on not only production activities, but also the business situation of enterprises in Vietnam. The final results from this report's assessment survey show that up to 87.2% of businesses are negatively impacted by the pandemic. In particular, cash flow shortage is considered one of the four factors that cause the greatest impact on business operations of businesses. In the Socio-Economic report published by the General Statistics Office, in the first ten months of 2021, nearly 100,000 businesses could not survive under the unfavorable market situation. This means that on average, more than 320 businesses closed every day in the first 10 months of 2021.

Besides creating a positive impact, accumulating cash also has many negative effects. Over the long term, cash will not generate returns and may be affected by inflation. Causes the business's investment ability to be lost and reduces its profit potential.

Therefore, many studies have focused on clarifying factors that can affect businesses' decisions to hold cash. However, for each different country and specific business industry, there are many contradictions in the level of influence of these factors, causing studies to not come to a unified conclusion. Besides, many research projects have not provided a solid basis to confirm the relationship between influencing factors and the decision to hold cash. In particular, research in Vietnam only focuses on certain industries or covers the entire economy without making comparisons between each industry and the entire economic system. Furthermore, research articles have not evaluated whether there is a change in the tendency to hold cash when placed in the time period before and after the Covid 19 pandemic?

In the context that the global economic environment still has many unfavorable factors, the impact from Covid and domestic and international economic and political events on the national economy and business performance of enterprises is still high. Unpredictable factors make it difficult for businesses to determine the risks they need to face in the future, while the application of cash hedging policies still faces many difficulties and challenges due to businesses often lacking management. strict financial management, researching which factors can impact businesses' decisions to hold cash will help businesses recognize the importance of each factor and make appropriate adjustments. Being more coordinated and proactive in cash management to

achieve the most optimal efficiency is extremely necessary. For those reasons, the research team chose the topic Cash holding ratio in Vietnamese enterprises: The role of alternative sources of liquidity and asymmetry between industries - Ensuring scientific significance and practical significance.

2. Overview of remittances

2.1. Overview of factors affecting cash holdings

Regarding the influence of the legal protection framework on retail investors, Kusnadi and Wei (2011) applied the weighted least squares (WLS) method when studying multinational companies during the period 1998 - 2008. The study concluded that companies in countries where minority investors are protected by strong regulatory barriers are more likely to lower their cash holdings to respond to an increase in cash flow more than companies in countries where the legal framework is not strict and investors' benefits are not guaranteed to the maximum extent. This relationship is most evident for financially constrained firms and those with a high need for hedging risks. Legal protection of investors (rather than financial development) represents the leading effect in influencing the cash management policies of international companies.

Tsagkanos and colleagues (2015) conducted an empirical study on the case of UK companies over a relatively long period from 1980 to 2012 using an OLS model with the selected dependent variable being the money ratio. and cash equivalent to total assets. This work shows the existence of a negative correlation between cash holdings and operating cash flow, net working capital, capital expenditures, and financial leverage. In addition, the study also expanded the assessment of the impact of other factors such as book value to market value coefficient, tax costs, company longevity, cash flow fluctuations in the economy, and company scale. company, R&D costs. Research shows that companies tend to increase their cash holdings more when tax costs increase or when the company is young, and conversely, decreasing R&D costs will reduce the proportion of cash in the treasury. of businesses decreased.

This result continues to be confirmed by the work of Arfan et al. (2017) on manufacturing companies in Indonesia from 2009 to 2013 by using a combination of 3 linear regression models FGLS, FEM, REM to focus on analyzing and evaluating the impact of factors: Growth opportunities, net working capital, financial leverage, profitability and fixed asset expenditure on the variation of cash holdings businesses. After the research process, the authors admitted that growth potential exists and positive profitability will cause the company to reserve larger amounts of cash so as not to miss investment opportunities. On the contrary, if the debt utilization ratio increases or fixed asset spending increases, businesses' cash will decrease due to the use of money in investment items.

On the other hand, Rukh and Rehman (2019) studied non-financial companies listed on the KSE100 index in Pakistan during the period 2005-2012 with panel data and regression models FEM, REM and taking into account The impact of the 2007-2008 economic crisis has come to an opposite conclusion about financial leverage compared to the studies mentioned above. The results of the model confirm that the dependent variable is that the ratio of cash and cash equivalents to total is negatively correlated with factors such as net working capital, company size, economic crisis, cash flow and vice versa. , financial leverage has a positive correlation. The author explains that the purpose of businesses is to avoid default, so businesses must increase cash reserves and strengthen their ability to overcome difficulties if the economy and creditors create problems. Financial pressure is too great on businesses.

For another special factor, transportation costs, Eskandari and Zamanian (2022) apply a model using time series data on the level of cash holdings in the period 1955 - 2017 of large companies. small and large scale in the US under financial constraints. The study confirms that there is a negative and significant relationship between cash holdings and carrying costs that is limited to large and financially unconstrained firms because large firms have the ability to Connect easily and quickly with funding sources in the market as well as influence partners in business activities.

Nguyen Thanh Mai (2016) conducted research on factors affecting cash holdings of 14 enterprises in the Pharmaceutical industry listed on HOSE and HNX from 2010-2014 on the basis of balance sheet data. Pooled PLS, REM and FEM model regression methods. The results of the study found that 3/9 independent variables have a positive impact on the cash holding ratio in businesses: financial leverage, company size, and cash flow.

The work of Pham Ha and Phan Dinh Que Tran (2018) approached this topic from a new perspective when quantifying the impact of financial constraints on the cash holding decisions of 102 non-financial companies. listed on two Vietnamese stock exchanges, HOSE and HNX, in the period 2010-2016. The way to classify financially constrained companies is based on rankings according to the KZ and WW indexes. When studying a special factor, Hung D

3. RESEARCH METHODS AND DATA

Quantitative techniques are comprehensive and complex for mixed least squares regression (Pooled OLS), fixed effects model (FEM), random effects model (REM) and generalized least squares (FGLS) model. Specifically, the process of estimating and selecting the most optimal model for the study was carried out by the research team with the support of Stata17 software as follows:

Step 1: Collect information: Find out and analyze information from old studies to select independent and dependent variables suitable for research conditions. Then proceed to collect data to include in the model. The content of the data collection process is presented in detail in section 3.2.

Step 2: Process data on Stata: The data selected for research after the collection process will be synthesized, analyzed, and calculated on Stata 17.0 software. The method of calculating variables in the model and how to create dummy variables are presented in detail in section 3.4.

Step 3: Descriptive statistics: Descriptive statistics are conducted to determine the number of observations, average value, standard deviation, maximum value, and minimum value of the variables in the model. Descriptive statistics were performed on the entire sample and for each sub-industry selected for research to compare the differences between sectors.

Step 4: Check the Pearson correlation coefficient matrix and magnification factor (VIF) to identify multicollinearity between variables in the model. Pearson correlation analysis is a measure of the strength of the linear correlation between variables used in the model. If two independent variables are not correlated (sig greater than 0.05), there is almost no possibility of collinearity between these two variables. If two independent variables are correlated (sig less than 0.05) and the absolute value of the correlation coefficient is greater than 0.7, the possibility of collinearity between them is relatively high (Dormann et al., 2013). When considering the magnification factor, if the VIF value is less than 2, it shows that there is no correlation between this independent variable and any other variable, or that multicollinearity does not occur, and when VIF is greater than 5, then multicollinearity will occur. If multicollinearity occurs, the research team will remove the multicollinearity variables to eliminate defects in the model. The inspection content is presented in the following sections

Step 5: Quantitative model

Regression model using the least squares method (Pooled OLS)

Fixed effects model (FEM)

Generalized least squares regression (FGLS

Table 1. Regression equation table of research models

Model	**Regression**
OLS	Cashi, t = β0 + β1*LnSizei, t + β2*NWCi, t + β3*LEVi, t +β4*ROAti, t + β5*LnAgei, t + β6*CEi, t +β7*CFi, t +β8*TAXi, t + β9*COVID + ui, t

FEM

$Cashi,t = \beta0 + \beta1*LnSizei,t + \beta2*NWCi,t + \beta3*LEVi,t + \beta4*ROAti,t + \beta5*LnAgei,t + \beta6*CEi,t + \beta7*CFi,t + \beta8*TAXi,t + \beta9*COVID + \alpha i + ui,t$

REM

$Cashi,t = \beta0 + \beta1*LnSizei,t + \beta2*NWCi,t + \beta3*LEVi,t + \beta4*ROAti,t + \beta5*LnAgei,t + \beta6*CEi,t + \beta7*CFi,t + \beta8*TAXi,t + \beta9*COVID + \alpha i + \varepsilon i,t + ui,t$

In there:

β0: blocking coefficient

β1 ... β9: coefficients of the corresponding independent variables

i is the ith company

ui,t: white noise

αi : represents all unobservable factors that differ across companies but do not change over time.

Ɛi,t: represents all unobservable factors that change over time but do not differ between subjects.

The author uses additional tests to select the most optimal model for this study. Fisher test (F-test) is used to select the optimal model between the Pooled OLS model and the FEM model at the 5% significance level with the following pair of hypotheses:

H0: There is no difference between study subjects over time, or the OLS model is more optimal.

H1: There exist differences between research objects over time, or the FEM model is more optimal.

Besides, the Hausman test is used to choose whether the FEM or REM model is more suitable for the research data set with the following pair of hypotheses (at the 5% significance level):

H0: There is no correlation between the explanatory variables and the random component in the model, in other words, the REM model is more optimal.

H1: There exists a correlation between the explanatory variables and the random component in the model, or in other words, the FEM model is more optimal.

Step 6: Check the model for defects

The following pairs of hypotheses are presented at the 5% significance level:

H0: The model does not have heteroskedasticity.

H1: The model has heteroskedasticity phenomenon.

The autocorrelation phenomenon is evaluated through the Wooldridge test in all three models with the pair of hypotheses at the 5% significance level:

H0: The model does not have autocorrelation.

H1: The model exists autocorrelation phenomenon.

If P-value is greater than 0.05, it means there is not enough basis to reject H0 or hypothesis H0 is accepted. If P-value is less than 0.05, it means there is sufficient basis to reject H0, meaning hypothesis H1 is accepted.

In case the selected model has heteroskedasticity or autocorrelation or both of these defects occur simultaneously, the research team will apply the FGLS model to correct the defects and synthesize. final result.

3.2. Research data

The research focuses on the Joint Stock Company type because this is the most popular type of business in Vietnam today, and information about the company is also public and clear. In addition, the company's biggest advantage is that it can easily penetrate the capital market to mobilize capital for business; The company can operate without limitation on the life of the owner. In addition, joint stock companies listed on the stock exchange must comply with the provisions of law on financial reporting and must regularly publicly disclose financial reports, annual reports and other information. periodic information related to business activities. Therefore, this information and data can be easily accessed to perform analysis and draw conclusions about the company's operations.

Table 3. 2-level industry classification table

Sub-sector level 1	Level 2 sub-sector
	Insurance
	Financial services
Bank	Bank
Real estate	Real estate
	Retail
Consumer services	Travel and entertainment
	Traditional
	Medicine
	Medical equipment and services
	Oil and gas production
	Oil and gas equipment, services and distribution
	Personal and household goods
Consumer goods	
	Food & Beverage
	Chemistry
Materials	Basic resources
	Industrial goods and services
Industry	Construction and materials
	Computer software and services
Information technology	Devices and hardware
	Water and electricity distribution
Community amenities	Manufacturing and gas
	Fixed telecommunications
	Mobile telecommunications

Source: Author compiled from FiinPro.

Description of variables

For the variable LnAge, it is determined by ln (year of research minus year of start of listing) because the authors only collected data on the year of start of listing of the business on FiinPro. However, there are businesses that, although listed later, have been operating and have enough data in previous years, making Age 0 and the value of LnAge impossible, leading to incomplete variable data. To handle this case, the authors created a variable with a conditional statement: if the research year (Year) is the year the listing begins (BDATE), then Age = Year – 2008

Table 3. Description of variables in the model and measurement methods

Variable name	**Calculation**	**Symbols and sign**	**sign expectations**
Dependent variable			
Cash holding ratio of company i in year t	Cash and cash equivalents / Total CASH assets	CASH	Opler et al (1999); Rukh and Rehman (2019); Tsagkanos et al (2015); Arfan et al (2017); Harford et al (2007); Mai Thanh Giang (2017); Pham Thanh Tu (2017)
Independent variables			

Company size	ln(Total assets)	LnSize (-)	Opler et al (1999); Rukh and Rehman (2019); Tsagkanos et al (2015); Pham Thanh Tu (2017); Mai Thanh Giang (2017)
Net working capital	(Short-term assets - Short-term liabilities - Cash and cash equivalents)/Total assets	NWC (-)	Tsagkanos et al (2015); Rukh and Rehman (2019); Pham Thanh Tu (2017)
Financial leverage	Total debt / Total assets	LEV (-)	Opler et al (1999); Tsagkanos et al (2015); Arfan et al (2017); Rukh and Rehman (2019); Pham Thanh Tu (2017); Mai Thanh Giang (2017)
ROA		ROA (+)	Arfan et al (2017); Pham Thanh Tu (2017)
Company longevity	ln(Year - BDATE) where BDATE is the year	LnAge (-)	Tsagkanos et al (2015); Pham Thanh Tu (2017)
Capital expenditure	Fixed assets / Total assets	CE (-)	Tsagkanos et al (2015); Mai Thanh Giang (2017); Arfan et al (2017)
Cash flow	(Profit after tax + depreciation) / Total assets	CF (+)	Dichu Bao et al (2012); Rukh and Rehman (2019); Tsagkanos et al (2015); Pham Thanh Tu (2017); Hung Dang Ngoc et al (2020)
Tax	expense/Net revenue	TAX (+)	Tsagkanos et al (2015)
Dummy variable	= 1 if study year 2020	COVID (-)	

Source: Author's own compilation

2.3. Research results and discussion

Descriptive statistics

Table 4: Descriptive statistical results of the study sample for the period 2009 – 2021

		Cash	**LnSize**	**LnAge**	**NWC**	**LEV**	**ROA**	**CE**	**CF**	**TAX**
Entire research sample	Medium	0.0993	27.3666	1.8581	0.1114	0.5023	6.7910	0.2543	0.0999	0.0143
	Standard deviation	0.1091	1.4855	0.6951	0.2094	0.2386	8.3482	0.2166	0.1145	0.4121
	Minimum value	0.0000	20.9746	0.0000	-0.6915	0.0027	-62.46	0.0000	-0.9033	-23.2075
	Maximum value	0.9612	33.6910	3.0445	0.9426	6.8407	83.91	2.6415	2.7371	2.1525
Consumer services	Medium	0.1560	26.2619	1.8792	0.1434	0.3649	7.6601	0.2831	0.1124	0.0252
	Standard deviation	0.1567	1.7339	0.6861	0.2384	0.2365	9.98	0.2361	0.1062	0.0439
	Minimum value	0.0032	23.3304	0.0000	-0.5004	0.0146	-25.55	0.0000	-0.2308	-0.0015
	Maximum value	0.9612	32.2004	2.9957	0.0852	0.9917	45.97	0.8773	0.4937	0.4873
Pharmaceutical and medical	Medium	0.0850	26.9600	1.7944	0.0207	0.4082	8.4124	0.2870	0.1090	0.0220
	Standard deviation	0.0885	1.3194	0.7139	0.0188	0.2201	9.9516	0.1724	0.1101	0.0202
	Minimum value	0.0002	23.6367	0.0000	-0.3912	0.0434	-62.46	0.0049	-0.9033	-0.0202
	Maximum value	0.4794	29.9080	2.7081	0.8504	0.9706	40.32	0.7364	0.3409	0.1176
Consumer goods	Medium	0.1187	27.6565	1.8969	0.1247	0.4593	9.4328	0.2546	0.1239	0.0183
	Standard deviation	0.1179	1.4685	0.6881	0.1999	0.1861	8.7468	0.1537	0.0969	0.0397

		Cash	**LnSize**	**LnAge**	**NWC**	**LEV**	**ROA**	**CE**	**CF**	**TAX**
	Minimum value	0.0021	24.6981	0.0000	-0.6915	0.0202	-31.72	0.0006	-0.6139	-0.1231
	Maximum value	0.6965	32.4680	3.0445	0.7590	0.9669	72.19	0.8485	0.8097	0.9271
Materials	Medium	0.0826	27.5477	1.8417	0.0828	0.5300	6.5224	0.2579	0.1002	0.0137
	Standard deviation	0.1115	1.3218	0.7014	0.1742	0.3129	8.6541	0.2035	0.1327	0.0170
	Minimum value	0.0002	20.9746	0.0000	-0.5999	0.0027	-36.42	0.0000	-0.8887	-0.0211
	Maximum value	0.8434	32.8141	3.0445	0.7445	6.8407	83.91	2.6415	1.6719	0.1576
Industry	Medium	0.0908	27.1998	1.8711	0.0767	0.5585	5.9345	0.2694	0.0970	-0.0019
	Standard deviation	0.0883	1.3554	0.6875	0.2033	0.2251	7.7179	0.2258	0.1257	0.6602
	Minimum value	0.0001	22.4806	0.0000	-0.5780	0.0120	-29.06	0.0003	-0.2566	-23.2075
	Maximum value	0.6690	31.0913	3.0445	0.9426	1.2839	74.26	0.9351	2.7371	1.5638
Information technology	Medium	0.1097	27.0783	1.9290	0.1907	0.4597	5.3654	0.1291	0.0719	0.0148
	Standard deviation	0.0880	1.8252	0.6999	0.1878	0.2287	8.1214	0.1169	0.0776	0.0154
	Minimum value	0.0003	23.1855	0.0000	-0.3671	0.0130	-18.26	0.0000	-0.1873	-0.0017
	Maximum value	0.4344	31.6144	3.0445	0.7679	0.9136	81.22	0.5749	0.6035	0.1010
Community amenities	Medium	0.1412	27.4866	1.8435	0.0186	0.4379	9.1237	0.4284	0.1419	0.0234
	Standard deviation	0.1439	1.3905	0.6929	0.2107	0.1835	7.5513	0.2601	0.0839	0.0317
	Minimum value	0.0006	21.3696	0.0000	-0.5295	0.0298	-3.94	0.0013	-0.0070	-0.0353
	Maximum value	0.6951	31.9975	2.8332	0.6459	0.8428	44.17	0.9779	0.4443	0.3179
Real estate	Medium	0.0629	28.1968	1.7783	0.2267	0.5066	4.2833	0.0995	0.0476	0.0497
	Standard deviation	0.0783	1.3450	0.7148	0.2099	0.1993	6.5317	0.1517	0.0735	0.2159
	Minimum value	0.0009	25.0130	0.0000	-0.0461	0.0110	-51.72	0.0000	-0.7833	-3.1402
	Maximum value	0.6943	33.6910	2.7081	0.8270	0.9141	36.77	0.9531	0.4542	2.1525

Source: Author compiled from Stata17

Some pre-test estimates

Table 5. Magnification factor (VIF) of variables in the research model of the Consumer Services industry

Variable	**VIF**	**1/VIF**
ROA	10.57	0.094647
CF	9.93	0.100722
LEV	2.99	0.334778
NWC	2.46	0.407267
CE	2.38	0.419667
LnSize	1.66	0.602423

TAX	1.54	0.648276
LnAge	1.36	0.735059
COVID	1.35	0.742909

Source: Author compiled from Stata17

Model selection

Based on the optimal model selection process built in the above section and the results of the F-test and Hausman test presented below, the study comes to the conclusion of the optimal model for each research sample. . Specifically:

Table 6: F-test results

Branch	**F-test results**	**Selected model**
Entire research sample	Prob > F = 0.0000	FEM
Consumer services	Prob > F = 0.0000	FEM
Pharmaceutical and medical	Prob > F = 0.0000	FEM
Consumer goods	Prob > F = 0.0000	FEM
Materials	Prob > F = 0.0000	FEM
Information technology	Prob > F = 0.0000	FEM
Industry	Prob > F = 0.0000	FEM
Community amenities	Prob > F = 0.0000	FEM
Real estate	Prob > F = 0.0000	FEM

Source: Author compiled from Stata17

For the F-test, the P-value obtained in the entire research sample and in all industries is < 5%. shows that there is not enough basis to reject H0 or conclude that the FEM model fits the research data better than the Pooled OLS model. Thus, after the F-test, it is necessary to evaluate the choice of the more optimal FEM or REM model.

Check for defects

After selecting the optimal quantitative research model through F-test and Hausman test for the research topic (Column 3 Table 4.5), the authors continue to perform the necessary tests to ensure validity. the sustainability of the estimated results as well as the objectivity and reliability of the arguments and interpretations derived from the research results.

The author has gone to Discussion of regression results

Discuss research results

The FGLS model is used as the result of the research and is presented in Table 7 below.

Regarding the role of a source of liquidity to replace cash - net working capital, the study considers Hypothesis H1: "Net working capital has a negative impact on the decision to hold cash of businesses" which has been proven. demonstrated with a statistical significance level of 0.1% in all industries and the entire research sample.

Cụ thể, kết quả nghiên cứu chỉ ra sự đồng nhất trong mối tương quan âm giữa vốn lưu động ròng và tỷ lệ nắm giữ tiền mặt tại tất cả các ngành cũng như toàn bộ mẫu nghiên cứu và kết quả này hoàn toàn đồng nhất với các kết quả nghiên cứu của Tsagkanos và cộng sự (2015), Specifically, the research results show a uniform negative correlation between net working capital and cash holdings in all industries as well as the entire research sample and this result is completely consistent with the results. research results of Tsagkanos et al. (2015), Rukh and Rehman (2019), and prove the correctness of hypothesis H1 given above.

Net working capital can be viewed as an alternative source of liquidity to cash holdings because companies can use their current assets to cover cash shortfalls or additional expenses. . Accordingly, companies with excess current assets tend to hold less cash for precautionary purposes (Tsagkanos et al., 2015). This is also consistent with the trade-off theory which states that firms can determine a level of cash holdings by balancing the marginal cost of holding liquid assets and the marginal return of holding hold cash.

The impact of net working capital size on the decision to hold cash at a business occurs most strongly in the Consumer Services industry and has the least influence in the Real Estate industry. Specifically, when net working capital increases by 1%, the cash ratio decreases by 0.69% in the Consumer Services industry and by 0.05% in the Real Estate industry.

Table 7: FGLS regression model results

	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LnSize	-0.00101 (-1.11)	0.00385 (0.94)	-0.0102* (-2.13)	-0.00644** (-2.66)	0.00154 (0.62)	-0.00610 (-1.58)	0.00176 (1.21)	0.00720 (1.46)	-0.00146 (-0.65)
NWC	-0.335*** (-50.65)	-0.690*** (-27.26)	-0.247*** (-8.81)	-0.535*** (-28.34)	-0.353*** (-19.72)	-0.286*** (-7.09)	-0.303*** (-29.04)	-0.470*** (-16.93)	-0.0549*** (-4.82)
LEV	-0.281*** (-40.29)	-0.578*** (-18.13)	-0.200*** (-6.40)	-0.462*** (-23.35)	-0.289*** (-16.31)	-0.222*** (-6.36)	-0.268*** (-25.62)	-0.299*** (-8.09)	-0.0267 (-1.81)
LnAge	-0.0136*** (-9.28)	-0.0110 (-1.96)	0.00761 (1.31)	-0.00839* (-2.15)	-0.0237*** (-7.17)	-0.00893 (-1.26)	-0.0171*** (-7.30)	-0.0316*** (-4.81)	-0.00632 (-1.56)
CE	-0.220*** (-38.38)	-0.532*** (-19.48)	-0.194*** (-6.27)	-0.356*** (-17.66)	-0.210*** (-14.20)	-0.305*** (-6.36)	-0.198*** (-21.90)	-0.289*** (-14.58)	-0.0695*** (-3.68)
CF	0.0810*** (7.80)	0.244*** (4.60)	0.0579 (1.32)	0.0774** (2.76)	0.0500* (2.28)	0.230** (3.03)	0.0113 (0.87)	0.314*** (5.70)	0.148*** (4.88)
TAX	0.00417 (1.69)	-0.154 (-1.01)	0.558 (1.87)	0.00909 (0.10)	0.184 (1.09)	-0.354 (-1.05)	0.00364 (1.49)	-0.146 (-0.99)	0.0126 (1.19)
COVID	0.00305 (1.54)	-0.00443 (-0.56)	-0.00377 (-0.48)	0.00271 (0.53)	0.00757 (1.73)	-0.0000635 (-0.01)	0.00379 (1.22)	0.0212* (2.56)	-0.00441 (-0.73)
Hệ số chặn	0.367*** (15.33)	0.506*** (4.99)	0.503*** (4.04)	0.662*** (10.12)	0.422*** (5.31)	0.482*** (4.60)	0.290*** (7.73)	0.214 (1.59)	0.123* (2.05)
Số quan sát	5733	416	234	871	858	195	2158	377	624

Notes: (0) Entire research sample; (1) Consumer Services Industry; (2) Pharmaceutical and Healthcare Industry; (3) Consumer Goods Industry; (4) Raw Materials Industry; (5) Information Technology industry; (6) Industry; (7) Community Utilities Industry; (8) Real Estate Industry;

: Statistically significant at the 5% significance level; **: Statistically significant at the 1% significance level; *: Statistically significant at the 0.1% significance level*

Source: Author compiled from Stata17

Besides studying the impact of net working capital on the cash holding ratio of businesses, the study also examines in detail the influence of other important variables. As follows:

Hypothesis H2: "Enterprise size has a negative impact on the enterprise's decision to hold cash."

The hypothesis is accepted at the statistical significance level of 5% and 1% in two industries: Medical Pharmaceuticals and Consumer Goods.

The analysis results show that the size of the business will negatively affect the amount of cash held and the authors' hypothesis H2 has been explained, however this influence is not significant. Accordingly, smaller-sized companies retain more cash and large-sized companies have easy access to the capital market to mobilize capital. Therefore, investment opportunities are greater and these companies do not need to accumulate additional cash (Rukh and Rehman, 2019), this result also supports the trade-off theory. The coefficient of the scale variable shows that when the size of a business's assets increases by 1 VND, the cash ratio in companies in the Medical Pharmaceuticals and Consumer Goods industries is 0.01% and 0.006%, respectively.

Hypothesis H3: "Financial leverage has a negative impact on a business's decision to hold cash."

The hypothesis is accepted at the 0.1% statistical significance level in most industries, except for the Real Estate industry (7% significance level).

This study, similar to Tsagkanos et al. (2015), Arfan et al. (2017), and Mai Thanh Giang (2017), also shows that financial leverage has a significant, negative impact on profitability. Cash holding rates across all industries. In other words, when businesses in the industry promote the use of financial leverage, the amount of cash in the business will decrease and vice versa in most industries. This is explained when a company is optimistic about its ability to access the capital market more easily, so it can completely use external funding to replace the cash in the company for its purposes. investment destination. When financial leverage increases by 1%, it will reduce the cash ratio in the Consumer Services, Pharmaceuticals and Healthcare, Consumer Goods, Raw Materials, Information Technology, Industry, and Community Utilities industries with The decreases were 0.58%, 0.2%, 0.46%, 0.29%,

0.22%, 0.27%, 0.3% respectively. Considering the overall sample, this decrease is estimated to be 0.28%. This result is consistent with trade-off theory and pecking order theory as well as supporting the group's hypothesis H3.

In addition, the negative correlation between financial leverage and cash reserve ratio in the pharmaceutical and medical industries shown from the research team's quantitative analysis results also contradicts Nguyen Thanh's findings. Mai (2016) when the author concluded that for businesses in the Pharmaceutical industry in Vietnam, the higher the proportion of debt in their capital structure, the more they tend to hold cash. The difference may be because the pharmaceutical and medical industry group mentioned in this study has a broader scope than the pharmaceutical industry in particular in Nguyen Thanh Mai's study (2016). This positive relationship may come from the fact that businesses increase their external debt at a high rate, which means they will suffer greater financial pressure, especially when the costs of operating Increased use of external capital will lead to financial distress in the enterprise. Therefore, these companies are encouraged to hold more cash to hedge against unpredictable risks.

Hypothesis H4: "Business longevity has a negative impact on a business's decision to hold cash."

The hypothesis is accepted at the 0.1% and 5% statistical significance levels.

Specifically, business longevity is statistically significant in the entire research sample (0.1% significance level), but if each sub-sector is considered, this independent variable is only statistically significant in the Consumer Goods industry. (5% significance level), Raw Materials industry (0.1% significance level), Industry industry (0.1% significance level) and Community Utilities industry (0.1% significance level) and all show a correlation negatively affects the amount of cash held and satisfies hypothesis H4. This result contradicts the statement of Pham Thanh Tu (2017) but supports the conclusion of Tsagkanos et al. (2015).

Companies that have been around for a long time often have a high reputation and standing, so they maintain good relationships with customers and suppliers, as well as enjoy more favorable trade credit terms and financial support. capital support with more incentives. This allows them to rely less on internal cash reserves to meet working capital needs. The profits of these companies are also stable and their risk management and cash flow management capabilities are better, causing the cash retention ratio to be lower than that of young companies. On the other hand, long-standing companies may have longer-term investment strategies or pay more frequent dividends to shareholders, reducing cash.

Hypothesis H5: "Capital spending has a negative impact on a business's decision to hold cash."

The hypothesis is accepted at the idea level

The two rejected hypotheses include: Hypothesis H7: "Tax costs have a positive impact on a business's decision to hold cash." and Hypothesis H9: "The Covid 19 epidemic has a negative impact on the decision to hold cash at businesses.", implying that tax costs do not have a statistically significant impact on the decision to hold cash at businesses. Karma. Meanwhile, after Covid 19, the cash holding rate of businesses in the Community Utilities industry has increased, while in businesses in other industries, after Covid - 19 there is no evidence to prove the increase. significant change in the cash holding ratio of businesses. This comes from the fact that the impact of the Covid pandemic caused most economic sectors to freeze or no longer operate as effectively as before, but businesses in the Community Utilities industry (including the Water and Distribution industry) Electricity Distribution, Manufacturing and Gas) still have to operate to service the lives of consumers so they can still generate profits and maintain larger cash reserves for precautionary purposes.

Regarding the industry asymmetry factor, through the above analysis, it can be seen that the research results between models determining the influence of factors on the cash ratio by each industry give results about different levels of impact.

Depending on the characteristics of each business industry, related to the level of risk, access to capital, seasonality, etc., the financial management mechanism in each industry will have certain differences. This will lead to the tendency to adjust the rate of increase or decrease in cash reserves unevenly across industries. Experimental evidence has been analyzed by the authors above. For example, when net working capital increases, companies in the Consumer Services industry tend to reduce their cash ratio quite a bit, but this decrease is not significant for the Real Estate industry.

3. CONCLUSION

The research empirically investigated the factors affecting the decision to hold cash at 441 enterprises listed on the Vietnamese stock market (HOSE, HNX) in the period 2009 - 2021 according to 8 business sectors. economy, specifically: Consumer Services industry, Pharmaceutical and Healthcare industry, Consumer Goods industry, Raw Materials industry, Information Technology industry, Industry industry, Community Utilities industry and Real Estate industry.

The quantitative research model is comprehensively conducted with complete and complex tests to ensure the sustainability of the research to evaluate the impact of factors on cash holdings according to the following criteria: economics, thereby providing conclusions and interpretations that have contributed and supplemented previous research on this topic. In addition, the study also re-systemizes the theoretical basis of businesses and the role of cash holding in businesses to emphasize and enhance the importance of cash management in businesses.

The results show that the average cash reserve ratio in businesses is 9.93%. The research hypotheses were tested using panel regression method based on the FGLS model, thereby identifying the correlation between 8/9 independent variables (enterprise size, net working capital, leverage). finance, business longevity, capital expenditure, cash flow, Covid19 epidemic) with the dependent variable being the ratio of cash held in the business across the entire sample and by industry

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